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(54) Device for Peeling Shrimps

(57) A device for peeling shrimps has two parallel prongs which can be pushed towards a support on which a shrimp is placed to project under the shrimp's shell. At a certain stage in the

forward movement of the prongs, they become able to move downward relative to the support, and at the same time they are caused to separate along arcuate paths so that as they move downward, they spread the shell of the shrimp apart.

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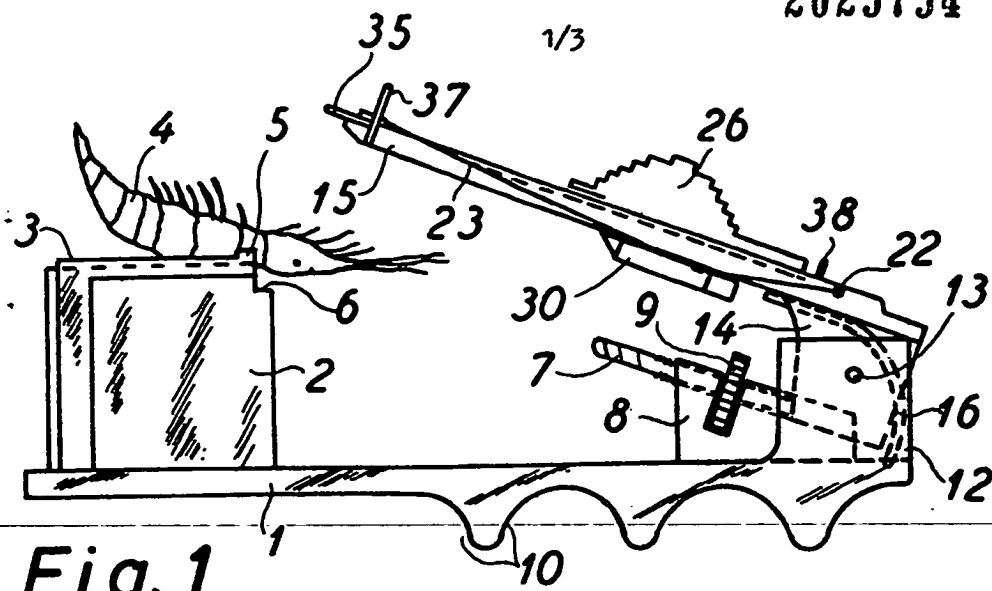


Fig. 1

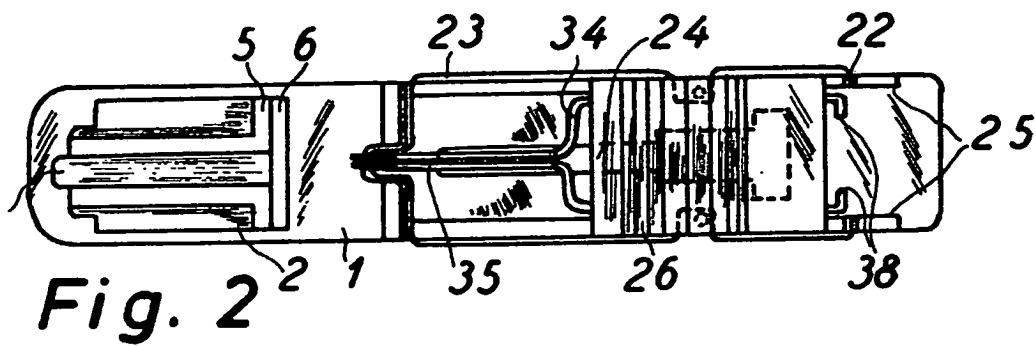


Fig. 2

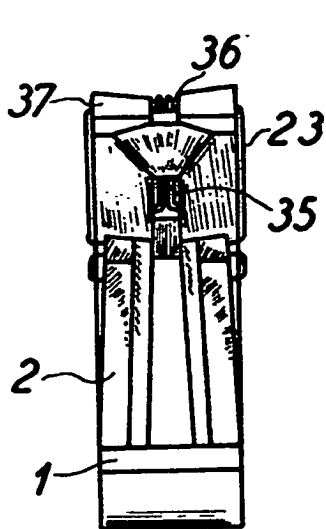


Fig. 3

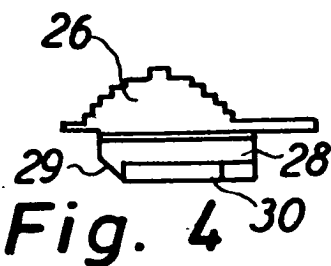


Fig. 4

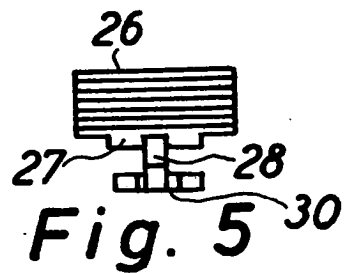


Fig. 5

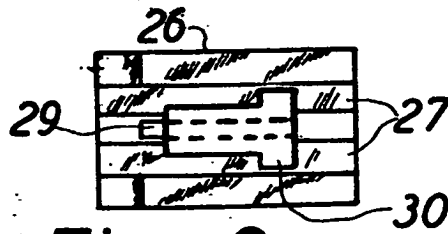


Fig. 6

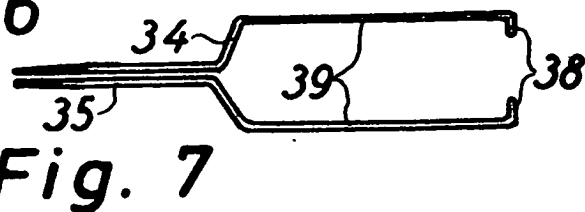


Fig. 7

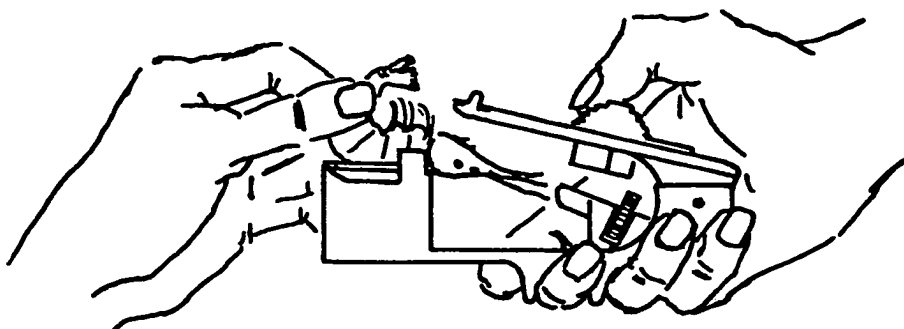


Fig. 8

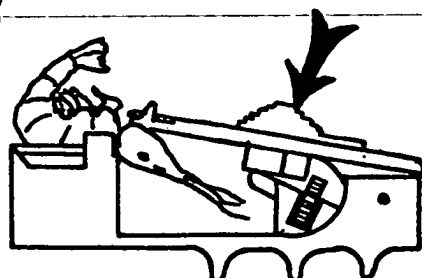


Fig. 9

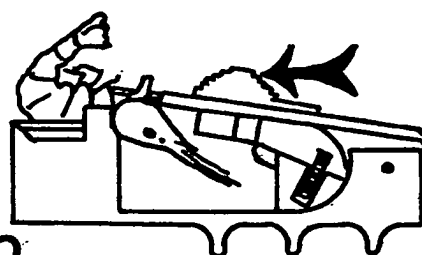


Fig. 10

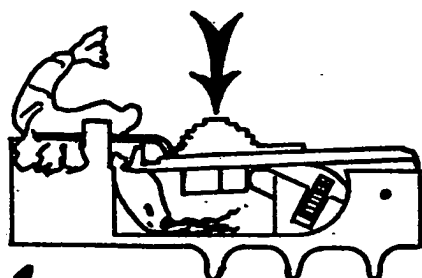


Fig. 11

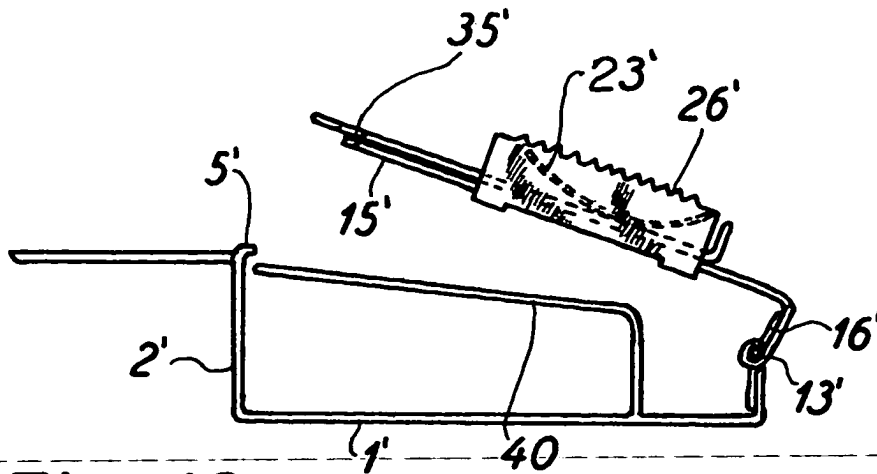


Fig. 12

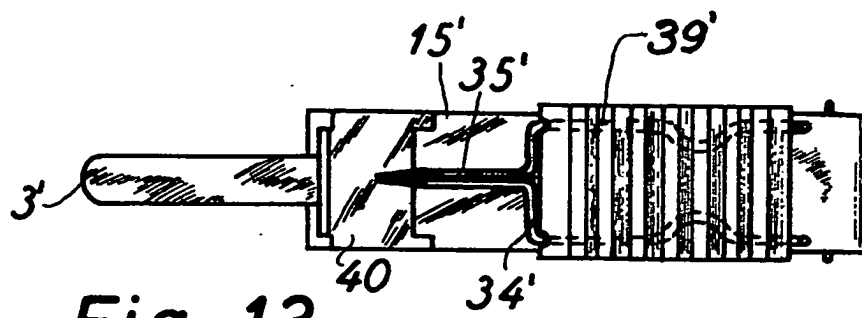


Fig. 13

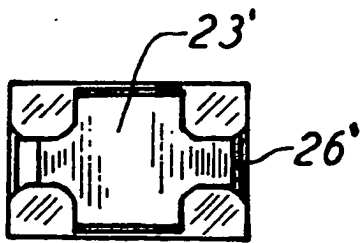


Fig. 16

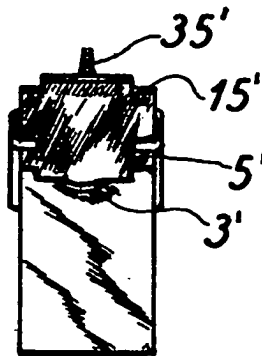


Fig. 14

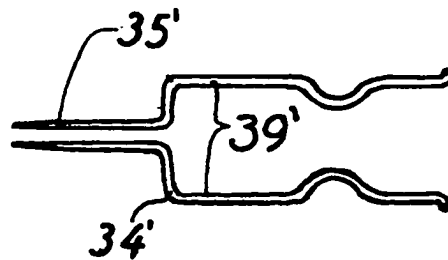


Fig. 15

SPECIFICATION

Device for Peeling Shrimps

This invention relates to a shrimp-peeling device having a support for the back of the shrimp and two opening elements lying close to each other and being movable in relation to the support for the shrimp, said opening elements being arranged in such a way that when the shrimp is placed head first and on its back on the support, they can be led lengthwise along the shrimp and between the free-lying edges of the shell and press said shell edges outwards from each other and in a direction towards the support, said opening elements also being movable lengthwise on an arm which is pivotable around an axis parallel with the support and at right angles to its length the pivotable arm being provided with an operating means having connection with and serving to move said opening elements forwards and backwards along said arm.

Attempts have been made to produce such a device with the aim of enabling unpractised users to peel shrimps quickly and without difficulty, however, experience has shown that with hithertoknown devices of this kind, it is very difficult to control the lengthwise-moving opening elements in such a way that damage to the meat of the shrimp is avoided. The opening elements of existing devices are in the form of thin rods of uniform thickness, capable of being inserted into the extending shell edges on the ventral side of the shrimp when the shrimp is placed with its back on the support and its head facing the opening elements. These opening elements or rods are arranged in such a way that they can move away from each other, and are connected to an operating means on a pivotable arm which moves them when said operating means is moved a given distance forwards. At the same time that this spreading outwards of the opening elements takes place, downwards pressure is applied to the pivotable arm to loosen the sides of the shell from the body of the shrimp, but as this always happens at one and the same time regardless of the size of the shrimp, and since the downwards movement of the pivotable arm is not adjustable, the two movements, i.e. the spreading of the opening elements and the swinging of these downwards around the body of the shrimp, are not synchronised, the result being that it is very easy to ruin the meat of the shrimp, for example by pressing the pivotable arm too far down before the spreading of the opening elements takes place. Moreover, as the time at which this spreading outwards takes place cannot be arranged to suit the size of the shrimp, the device is suitable only for shrimps of a certain size, the reason being that as mentioned above it is difficult to control the opening elements so that they are led forwards at the correct height under the edge parts of the shell.

According to the invention, there is provided a device for peeling shrimps, the device comprising a base, a support at one end of the base for a

shrimp to be peeled, an arm extending towards the support and pivoted to the base at a position spaced from the support for movement past the support towards the base, two opening elements mounted on the arm, a slidable member for sliding the opening elements along the arm and over the support, and a guide on the base cooperating with the sliding member to maintain the arm in the correct orientation for inserting the opening elements under the shell of a shrimp on the support and to restrain pivoting movement of the arm towards the base until the sliding member has moved far enough along the arm for the opening elements to be inserted fully under the shell of the shrimp, the opening elements being arranged to move laterally apart, as well as towards the base with the arm, when the cooperation between the abutment and the sliding member ceases, to spread open the shell of the shrimp.

The result is that the opening elements of the device according to this invention follow the shape of the shrimp. The opening elements preferably yield flexibly in the lateral direction, and also upwards, hereby considerably reducing the risk of damage to the meat of the shrimp. This risk is further reduced if the guide is adjustable to suit different sizes of shrimp (or prawns), hereby enabling the closely-lying opening elements to be fed forward with great safety along the extending edge parts of the shell, until at a point determined by the position of the guide (set according to the size of the shrimp) they are led downwards and out to the sides, following the shape of the shrimp.

The opening elements can be pivotably mounted on individual axes, said axes lying at a distance from each other and parallel with the length of said opening elements. At the leading end of the pivoting arm, the opening elements may be pressed downwards by a spring member placed on said arm. The result is a simple and inexpensive construction which functions safely and provides suitable flexibility both upwards and out to the sides.

The guide can consist of an upwardly-inclined threaded bar which is mounted in a bracket and movable in said bracket by means of a knurled nut. With the arm pivoted downwards, a projection underneath the slidable member during the forward movement of said member slides along the upper end of the threaded bar, hereby preventing the complete pivoting downwards of the arm until the slidable member has reached so far forward that said projection moves free of the upper end of the threaded bar. This provides the additional advantage that when adjusted to suit large shrimps, the movable opening elements are led forwards at a greater angle to the horizontal than when adjusted for smaller shrimps, so that regardless of the size of the shrimp, their ends are led along the ventral side of the shrimp without cutting into the meat, bearing in mind that the bigger the shrimp, the steeper the angle of its

ventral side when placed on its back on the support.

A further result is that before being led downwards around the body of the shrimp, the opening elements are led a distance forward to suit the size of the shrimp to which the device is adjusted.

An alternative form of guide is set forth in claim 4. This form, which is a leaf spring, makes the device a particularly simple and effective shrimp-peeling means, and with suitable pressure and little practice enables shrimps to be peeled in a gentle and quick manner.

The invention will now be described in more detail, by way of example, with reference to the accompanying drawings, wherein—

Figure 1 shows a first embodiment of this invention seen from the side;

Figure 2 is a plan view of the embodiment of Figure 1;

Figure 3 is a front view of the embodiment of Figure 1;

Figure 4 is a side view of the operating device for the embodiment of Figure 1;

Figure 5 is an end view of the operating device; Figure 6 is an underneath view of the operating device;

Figure 7 shows two opening elements for the embodiment in Figure 1;

Figure 8—11 show four stages of use of the embodiment of the device shown in Figure 1;

Figure 12 shows a second embodiment of this invention seen from the side;

Figure 13 is a plan view of the embodiment shown in Figure 12;

Figure 14 shows the embodiment of Figure 12 seen from the front;

Figure 15 shows two opening elements for the embodiment in Figure 12; and

Figure 16 is an underneath view of the operating device for the second embodiment.

The first embodiment of this invention shown in Figures 1 to 7 has a bottom plate 1, at one end of which is mounted an abutment 2, the upper surface of which has an elongated recess 3 extending in the device's lengthwise direction, and in which the shrimp 4 to be peeled is placed with its back downwards and its head facing the middle of the device as shown in Figure 1. The one end of the recess in the abutment is provided with a pair of lugs 5 with surfaces inclined towards the recess, said lugs serving to control the shrimp when it is placed on the abutment, and a transverse edge 6 against which the neck of the shrimp is pressed when the front end of the pivotable arm 15 is pressed down against the shrimp's neck. The pivotable arm 15 is supported between two lugs 12 by means of a horizontal spindle 13, said spindle being mounted in two holes through two lugs 14 on the pivotable arm. A tensioned leaf spring 16 is provided between the bottom plate 1 and the arm 15, in such a way that it tries to force the arm upwards. The arm 15 is in the form of a plate having a lengthwise extending slot 24 in its centre, said slot serving to guide an

operating device 26 which can slide on rails 25 at the sides of the arm. The opening elements 34 are formed by a pair of cranked rods, the front ends 35 of which lie close together in a groove 36 in the surface 37, which is at right angles on the arm. The opening elements 34 are pressed down against the arm 15 by means of a spring, shown here as a thin piece of steel wire 23, which lies over the ends 35 of the opening elements and continues down along the sides of the arm and ends in a notch 22 in the rails 25.

As already mentioned, the operating device 26 can slide on the rails 25, and provides a bearing for the branches 39, of the elements 34. When the elements 34 are operated, they pivot about the branches 39 which lie between the rails 25 and the side members 27 on the bottom of the operating device 26. The opening elements have bent-back ends 38, so that they are led back by the operating device 26. Between the side members 27 on the bottom of the operating device 26 is a T-formed projection 30, this being fastened to a downwards-extending and vertical plate 28, said T-formed projection working with the slot 24 to guide the operating device. When being assembled, the T-formed projection 30 is introduced between the corresponding side extensions in and at the rear of the slot 24 and secures the operating device to the plate. In the complete assembly, the leading edge of the leaf spring 16 forms a stop for the operating device, preventing it from being moved so far back that it can be taken out of the T-formed portion of the slot 24.

The plate 28 extends down in front of the T-formed projection 30 and has an inclined leading end 29 which works together with an adjustable stop arrangement consisting of the threaded bar 7, said threaded bar being capable of being moved in its lengthwise direction in the bracket 8, by means of the knurled nut 9 and set to correspond with the size of the shrimps to be peeled.

When being operated, the device is held as shown in Figure 8 with the fingers gripping between the ridges 10 provided on the bottom plate 1, and the thumb placed on the operating device, the raised surface of which is stepped to prevent the thumb slipping. When a shrimp 4 is placed on the abutment 2, the arm 15 is pivoted downwards as shown in Figure 9, until the underside of the projection 30 comes up against the threaded bar 7, after which the operating device is pushed forward with the projection 30 sliding along the leading end of the threaded bar, so that when the device has been adjusted to suit the size of the shrimps being peeled, the leading ends of the opening elements are led safely forward and in under the edges of the shell. When the operating device is pushed further forward, and the ends 35 of the opening elements are led in along the ventral side of the shrimp, the projection 30 moves free of the threaded bar 7 as shown in Figure 10, the result being that the arm

15 is pressed further down as shown in Figure 11 under the pressure of the user's thumb. Against the spring effect of the steel wire 23, the ends 35 of the opening elements 34 will now turn around the branches 39 and move down on each of their respective sides of the body of the shrimp, and between this and the shell which is pushed to the side so that the body is freed from the shell, while at the same time the head is pulled off. The rear end of the body, which is held by the fingers of the left hand, is given a slight squeeze, hereby completely peeling the shrimp.

A second embodiment of the device according to this invention is shown in Figures 12 to 16.

15 This consists of a bottom plate 1' having a right-angled-raised portion 2', the top of which is provided with a pair of lugs 5', from where the support for the shrimp is formed by an elongated tongue, said tongue being shaped to form a recess 3'. At the opposite end of the bottom plate is a pivotable arm 15', said arm being held up by a leaf spring 16' mounted around the spindle 13'. The arm 15' has a movably mounted operating device 26', in which the opening elements 34' are pivotably mounted. The opening elements are held together by means of a leaf spring 23', see Figure 12, in the operating device 26, during the first part of the movement of the operating device. The top of the lugs 5' extend sloping upwards from the recess 3' towards the sides of the device, so that the leading ends 35' of the opening elements—when the operating device is moved forwards and downwards—move outwards, hereby freeing the shell of the shrimp at the same time as the head is pulled off.

To create sufficient counter-pressure against the pressing down of the arm, the device is also provided with a leaf spring 40, this being secured to the bottom plate 1', hereby forming a flexible resistance against the arm's downwards movement when the arm is depressed, until the ends 35' lie at a suitable distance above the support for the shrimp in the recess 3', so that the ends are introduced just under the edges of the shell when the operating device is moved forwards. After the ends have been suitably inserted in the shrimp, the operating device can be pressed down against the action of the leaf spring 40, whereupon the branches 39', see especially Figure 15, of the opening elements will be turned with their bent portions pushing the leaf spring 23' upwards, the result being that the ends move around along the inside of the shell to free the body of the shrimp in exactly the same manner as explained for the first embodiment of the invention.

Claims

1. A device for peeling shrimps, the device comprising a base, a support at one end of the base for a shrimp to be peeled, an arm extending towards the support and pivoted to the base at a position spaced from the support for movement past the support towards the base, two opening elements mounted on the arm, a slidable member for sliding the opening elements along the arm and over the support, and a guide on the base cooperating with the sliding member to maintain the arm in the correct orientation for inserting the opening elements under the shell of a shrimp on the support and to restrain pivoting movement of the arm towards the base until the sliding member has moved far enough along the arm for the opening elements to be inserted fully under the shell of the shrimp, the opening elements being arranged to move laterally apart, as well as towards the base with the arm, when the cooperation between the abutment and the sliding member ceases, to spread open the shell of the shrimp.

2. A device as claimed in claim 1, wherein the opening elements are cranked rods which, in the rest position of the device, have end portions which are parallel and close to one another and other cranked portions, carried in the sliding member, which are parallel and further from one another than the end portions, the rods being pivotable about the axes of the cranked portions so that the end portions move part, the device also including means for biasing the rods into the position where their end portions are close to one another.

3. A device as claimed in claim 1 or claim 2, wherein the guide comprises a threaded bar projecting from the base toward the arm and toward the support, the projecting length of the bar being adjustable by screwing it into or out of the base.

4. A device as claimed in claim 1 or claim 2, wherein the guide is a cantilevered leaf spring attached to the base, and the sliding member is in contact with the spring and moves away from the mounting point of the spring as it slides the opening elements over the support, until it reaches a position where the spring can easily be deformed to allow the arm to pivot toward the base.

5. A device for peeling shrimps, substantially as herein described with reference to Figures 1 to 11 of the accompanying drawings.

6. A device for peeling shrimps substantially as herein described with reference to Figures 12 to 16 of the accompanying drawings.